Hierarichal Clustering

① Agglomerative → combining

② Divisive → dividing

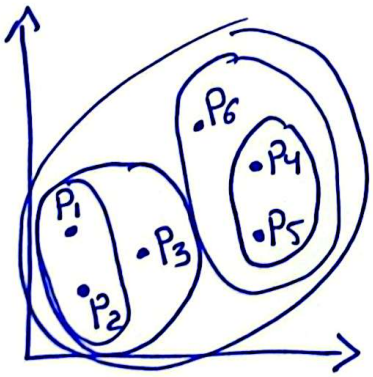
→ Agglomerative

① For each data point initially will consider it as a separate cluster

② ~~Find~~ After each iteration of calculating Euclidean distance, merge two clusters with minimum distance

③ Stop when there is a single ~~example~~ cluster of all examples, else go to step 2

Dendogram



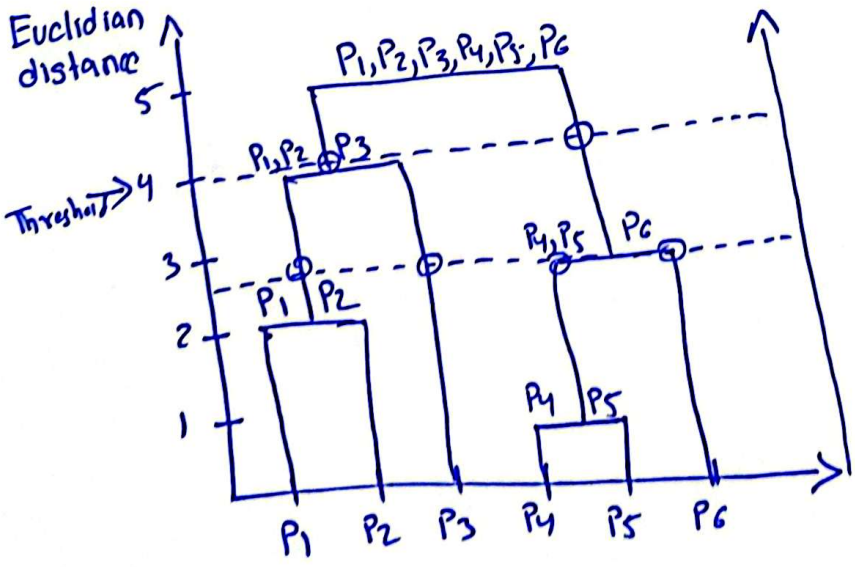
How to select K value

1- Select a threshold value based on distance

2- Cut the dendogram

3- Count the number of points where line cuts the dendogram.

4- Those number of points will be K value.



Dendogram

K=2

Bottom to Top Approach

Threshold = 4
K=2

Threshold = 2.5
K=4

K-Means vs Hierarchical Clustering

① Dataset size

- Small ⇒ Hierarchical
- High ⇒ K Means

② Type of Data

- Numerical ⇒ K Means
- Where cosine similarity ⇒ Hierarchical

③ Visualization

- Centroids ⇒ K Means ⟶ Elbow method
- Clusters ⇒ Hierarchical